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1	BRS	L1	409919	(weav? or woven) and conductive and thread or fiber	USPAT; US-PGP UB; EPO; JPO	2002/01/02 11:36
2	BRS	L2	5654	(weav? or woven) and conductive and (thread or fiber)	USPAT; US-PGP UB; EPO; JPO	2002/01/02 11:37
3	BRS	L3	1077	(weav? or woven) same conductive same (thread or fiber)	USPAT; US-PGP UB; EPO; JPO	2002/01/02 11:38

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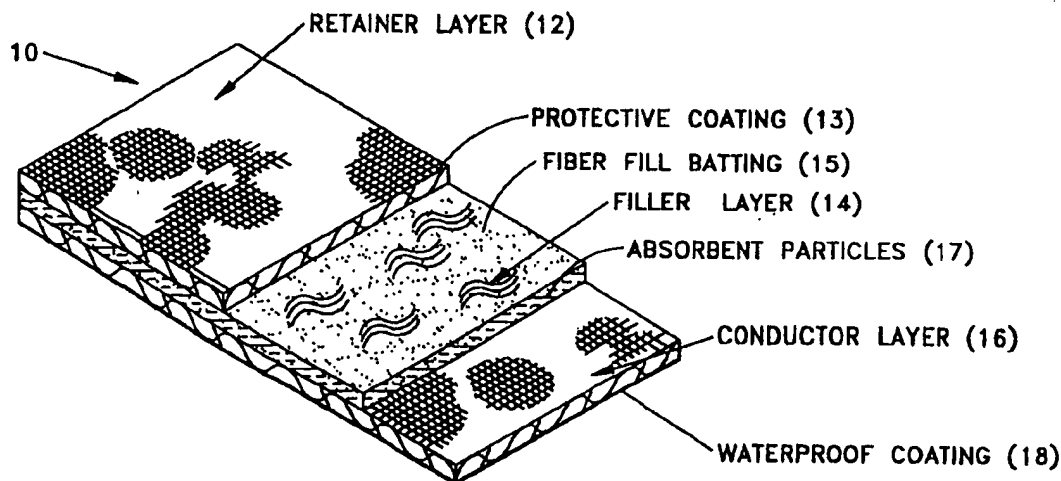
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US 20010027071A1

(19) **United States**(12) **Patent Application Publication** (10) Pub. No.: **US 2001/0027071 A1**  
BUMBARGER et al. (43) Pub. Date: **Oct. 4, 2001**(54) **PROTECTIVE MULTI-LAYERED LIQUID  
RETAINING COMPOSITE****Related U.S. Application Data**(63) Continuation-in-part of application No. 08/947,184,  
filed on Oct. 8, 1997, now Pat. No. 5,885,912.(76) Inventors: **THOMAS H. BUMBARGER,**  
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**DECATUR, AL (US)****Publication Classification**(51) Int. Cl.<sup>7</sup> ..... **B32B 27/12; B32B 3/00;**  
**B32B 5/02; B32B 5/26; B32B 9/00;**  
**B32B 27/04**  
(52) U.S. Cl. .... **442/85; 442/239; 442/244;**  
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**Nashville, TN 37219 (US)**(\*) Notice: This is a publication of a continued pros-  
ecution application (CPA) filed under 37  
CFR 1.53(d).(21) Appl. No.: **09/275,194**(22) Filed: **Mar. 23, 1999****ABSTRACT**

A multi-layered composite comprising a protective layer, a retaining layer, a conductive layer and a filler layer intermediate the retainer and conductive layers. The filler layer is impregnated with liquid absorbent particles. A protective layer having specific characteristic for protection against extreme temperatures, physical impacts and the like is specifically disclosed for use in combination with the retainer, filler and conductive layers. The protective layer provides additional protection of the person from catastrophic events such as exposure of a person to fire and/or severe impact such as may be caused by gunfire.

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(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2001/0036785 A1**  
Takagi et al. (43) **Pub. Date: Nov. 1, 2001**(54) **ELECTRICALLY CONDUCTIVE FABRIC****Publication Classification**(75) Inventors: Susumu Takagi, Fukui (JP); Shigekazu  
Orita, Fukui (JP)(51) Int. Cl.<sup>7</sup> ..... B32B 27/12; B32B 27/04;  
D02G 3/00  
(52) U.S. Cl. .... 442/229; 442/110; 428/373;  
428/364; 428/370; 428/394;  
442/181; 442/190; 442/191;  
442/212; 442/220Correspondence Address:  
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(57) **ABSTRACT**

(21) Appl. No.: 09/818,289

(22) Filed: Mar. 27, 2001

(30) **Foreign Application Priority Data**

Mar. 29, 2000 (JP) ..... 2000-95192

An electrically conductive fabric plated with a metal is disclosed wherein a percent fabric surface occupancy of warp as a constituent of the fabric is 90% to 110% and that of weft is 40% to 80%. The electrically conductive fabric is superior in all of resin back leak preventing property, flexibility yarn fray preventing property, electrical conductivity and electromagnetic wave shieldability.

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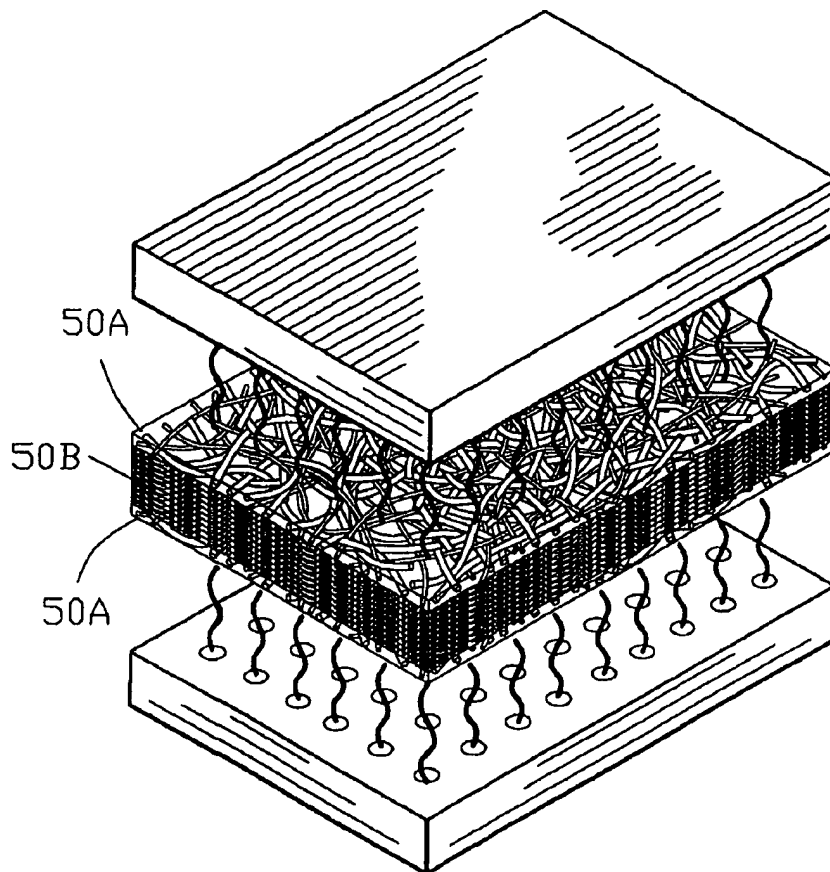
US 20010037972A1

(19) **United States**(12) **Patent Application Publication** (10) Pub. No.: **US 2001/0037972 A1**  
Quick et al. (43) Pub. Date: **Nov. 8, 2001**(54) **FLUID SEPARATING DEVICE**(52) U.S. Cl. .... 210/491; 210/505; 210/500.23;  
210/500.25(76) Inventors: **Nathaniel R. Quick**, Lake Mary, FL  
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FL (US); **Michael Liberman**, Deland,  
FL (US); **Michael C. Murray**, Eustis,  
FL (US); **Richard D. Range JR.**,  
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An improved fluid separating device for filtering a second fluid from a first fluid. The improved fluid separating device comprises a first layer of filter media comprising a sintered matrix of first fibers. A second layer of filter membrane comprises a matrix of second fibers. A third layer of filter media comprises a sintered matrix of third fibers. The first, second and third layers are formed into a lamination with the second layer being interposed between the first and third layers. The second layer has a pore size substantially less than the pore size of the first and third layers for enabling the second fluid to pass through the second layer and for inhibiting the first fluid from passing through the second layer for separating the second fluid from the first fluid. The improved fluid separating device is suitable for separating a gas from a liquid as well as separating a gas from a dissimilar gas.

(21) Appl. No.: **09/825,459**(22) Filed: **Apr. 3, 2001****Related U.S. Application Data**

(63) Non-provisional of provisional application No. 60/194,376, filed on Apr. 4, 2000.

**Publication Classification**(51) Int. Cl.<sup>7</sup> ..... **B01D 69/08****BEST AVAILABLE COPY**